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NEW YORK STATE COLLEGE OF AGRICULTURE ANNOUNCEMENT OF THE SUMMER TERM 1916

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CALENDAR

Summer Term, 1916

June 12,	Monday,	Registration of all students.	
June 13,	Tuesday,	Instruction begins in all courses.	
June 21,	Wednesday,	Forty-eighth Annual Commencement.	Half holiday.
July 4,	Tuesday,	Holiday.	
Sept. 27,	Wednesday,	Instruction ends.	

Summer Session

July 6,	Thursday,	Summer Session begins.
Aug. 16,	Wednesday,	Summer Session ends.

Fall Term, 1916–17

Sept. 15,	Friday,	Entrance examinations begin.
Sept. 25–26,	Monday–Tuesday,	Registration of new students.
Sept. 27,	Wednesday,	Registration of old students.
Sept. 28,	Thursday,	Instruction begins.
Sept. 30,	Saturday,	Registration, Graduate School.

NEW YORK STATE COLLEGE OF AGRICULTURE

FACULTY

Jacob Gould Schurman, A.M., D.Sc., LL.D., President of the University.
Beverly Thomas Galloway, B.Agr. Sc., LL.D., Dean of the College of Agriculture and Director of the Experiment Station.
Isaac Phillips Roberts, M.Agr., Professor of Agriculture, Emeritus.
John Henry Comstock, B.S., Professor of Entomology and General Invertebrate Zoology, Emeritus.
Henry Hiram Wing, M.S. in Agr., Professor of Animal Husbandry.
Thomas Lyttleton Lyon, Ph.D., Professor of Soil Technology.
John Lemuel Stone, B.Agr., Professor of Farm Practice.
James Edward Rice, B.S.A., Professor of Poultry Husbandry.
George Walter Cavanaugh, B.S., Professor of Chemistry in its Relations to Agriculture.
George Nieman Lauman, B.S.A., Professor of Rural Economy.
Herbert Hice Whetzel, A.M., Professor of Plant Pathology.
Elmer O. Fippin, B.S.A., Extension Professor of Soil Technology.
George Frederick Warren, Ph.D., Professor of Farm Management.
William Alonzo Stocking, jr., M.S.A., Professor of Dairy Industry.
Charles Henry Tuck, A.B., Professor of Extension Teaching.
Albert Russell Mann, B.S.A., Professor of Rural Social Organization.
Wilford Murry Wilson, M.D., Professor of Meteorology.
Ralph Sheldon Hosmer, B.S.A., M.F., Professor of Forestry.
James George Needham, Ph.D., Professor of Entomology and Limnology.
Rollins Adams Emerson, D.Sc., Professor of Plant Breeding.
Harry Houser Love, Ph.D., Professor of Plant Breeding Investigations.
Arthur Witter Gilbert, Ph.D., Professor of Plant Breeding.
Donald Reddick, Ph.D., Professor of Plant Pathology.
Edward Gerrard Montgomery, M.A., Professor of Farm Crops.
George Alan Works, B.Ph., M.S. in Agr., Professor of Rural Education.
Flora Rose, B.S., M.A., Professor of Home Economics.
Martha Van Rensselaer, A.B., Professor of Home Economics.
William Albert Riley, Ph.D., Professor of Insect Morphology and Parasitology.
James Adrian Bizzell, Ph.D., Professor of Soil Technology.
Glenn Washington Herrick, B.S.A., Professor of Economic Entomology and Entomologist of the Experiment Station.
Howard Wait Riley, M.E., Professor of Rural Engineering.
Harold Ellis Ross, M.S.A., Professor of Dairy Industry.
Hugh Charles Troy, B.S.A., Professor of Dairy Industry.
Samuel Newton Spring, B.A., M.F., Professor of Forestry.
Karl McKay Wiegand, Ph.D., Professor of Botany.
William Henry Chandler, M.S. in Agr., Ph.D., Professor of Research in Pomology.
Arthur Bernhard Recknagel, B.A., M.F., Professor of Forestry.
Merritt Wesley Harper, M.S., Professor of Animal Husbandry.
Cyrus Richard Crosby, A.B., Extension Professor of Entomology.
Elmer Seth Savage, M.S.A., Ph.D., Professor of Animal Husbandry.
Kenneth Carter Livermore, M.S. in Agr., Professor of Farm Management.
Edward Albert White, B.Sc., Professor of Floriculture.
Alvin Casey Beal, Ph.D., Professor of Floriculture.
Herbert Andrew Hopper, B.S.A., M.S., Extension Professor of Animal Husbandry.
Edward Sewall Guthrie, M.S. in Agr., Ph.D., Professor of Dairy Industry.
Maurice Chase Burritt, M.S. in Agr., Extension Professor and State Director of Farm Bureaus.
William Charles Baker, B.S.A., Professor of Drawing.
Mortier Franklin Barrus, Ph.D., Extension Professor of Plant Pathology.

Lewis Josephus Cross, B.A., Ph.D., Professor of Chemistry in its Relations to Agriculture.
Oskar Augustus Johannsen, A.M., Ph.D., Professor of General Biology.
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Cornelius Betten, Ph.D., Professor, Secretary, and Registrar.
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Lewis Knudson, B.S.A., Ph.D., Assistant Professor of Botany.
James Chester Bradley, Ph.D., Assistant Professor of Systematic Entomology.
E. Gorton Davis, B.S., Assistant Professor of Landscape Art.
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Harry Oliver Buckman, M.S.A., Ph.D., Assistant Professor of Soil Technology.
Mrs. Helen Binkerd Young, B.Arch., Assistant Professor of Home Economics.
Mrs. Anna Botsford Comstock, B.S., Assistant Professor of Nature Study.
Ralph Hicks Wheeler, B.S., Assistant Professor of Extension Teaching.
Harry Morton Fitzpatrick, Ph.D., Assistant Professor of Plant Pathology.
Byron Burnett Robb, B.S. in Agr., M.S. in Agr., Assistant Professor of Rural Engineering.
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Halsey B. Knapp, B.S., M.S. in Agr., Assistant Extension Professor of Pomology.
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Vern Bonham Stewart, Ph.D., Assistant Professor of Plant Pathology.
Annette J. Warner, Assistant Professor of Home Economics.
Arthur Lee Thompson, Ph.D., Assistant Professor of Farm Management.
Royal Gilkey, B.S.A., Assistant Professor of Extension Teaching. and Supervisor of Reading Courses.
Charles Truman Gregory, Ph.D., Assistant Professor of Plant Pathology.
Lex Ray Hesler, Ph.D., Assistant Professor of Plant Pathology.
William Howard Rankin, Ph.D., Assistant Professor of Plant Pathology.
Earl Whitney Benjamin, B.S. in Agr., Ph.D., M.S. in Agr., Assistant Professor of Poultry Husbandry.
Arthur Johnson Eames, Ph.D., Assistant Professor of Botany.
James Kenneth Wilson, B.S., Ph.D., Assistant Professor of Soil Technology.
Elmer Eugene Barker, Ph.D., Assistant Professor of Plant Breeding.
Edward Mowbray Tuttle, B.S. in Agr., A.B., Assistant Professor of Rural Education.
Robert Matheson, M.S. in Agr., Ph.D., Assistant Professor of Economic Entomology.
Blanche Evans Hazard, A.B., M.A., Assistant Professor of Home Economics.
David Lumsden, Assistant Professor of Floriculture.
John Hall Barron, B.S.A., Assistant Extension Professor of Farm Crops.
Gad Parker Scoville, B.S. in Agr., Assistant Professor of Farm Management.
Arthur Augustus Allen, Ph.D., Assistant Professor of Ornithology.
Leonard Amby Maynard, A.B., Ph.D., Assistant Professor of Animal Husbandry.
Forest Milo Blodgett, Ph.D., Assistant Professor of Plant Pathology.
Miriam Birdseye, B.A., Assistant Professor of Home Economics.
Jacob R. Schramm, Ph.D., Assistant Professor of Botany.
Howard Edward Babcock, Ph.B., Assistant Professor and Assistant State Director of Farm Bureaus.
Edward Riley King, B.S., Assistant Professor of Entomology.
Frank Elmore Rice, A.B., Ph.D., Assistant Professor of Agricultural Chemistry.
Lester Whyland Sharp, B.S., Ph.D., Assistant Professor of Botany.
Paul Work, A.B., M.S. in Agr., Superintendent of the Department and Instructor in Vegetable Gardening.
Layton S. Hawkins, B.A., Specialist in Agricultural Education, Lecturer in Rural Education.

George Walter Tailby, jr., B.S.A., Instructor and Superintendent of Livestock.
Charles Harvey Hadley, jr., B.S., Investigator in Entomology.
John Thomas Lloyd, A.B., Instructor in Limnology.
Bertha E. Titsworth, B.S., Instructor in Home Economics.
Helen Knowlton, A.B., Instructor in Home Economics.
Cecil Calvert Thomas, A.B., M.A., Instructor in Botany.
Earle Volcart Hardenburg, M.S. in Agr., Instructor in Farm Crops.
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Daniel Scott Fox, B.S., Instructor in Farm Management.
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Juan Estevan Reyna, E.E., Instructor in Drawing.
Leslie Eugene Hazen, B.S. in Agr., Instructor in Farm Structures.
James Lewis Strahan, B.S. in Agr., Instructor in Farm Structures.
Earl Long Overholser, M.A., Instructor in Pomology.
Cass Ward Whitney, B.S., Instructor in Extension Teaching.
Royal Josylin Haskell, B.S., Instructor in Plant Pathology.
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Laurence Howland MacDaniels, A.B., Instructor in Botany.
Allan Cameron Fraser, B.S., Instructor in Plant Breeding.
Lua Alice Minns, B.S., Instructor in Floriculture.
Alfred Carl Hottes, B.S., M.S. in Agr., Instructor in Floriculture.
George Cornell Supplee, M.S.A., Instructor in Dairy Industry.
Anna Elizabeth Hunn, B.S., Instructor in Home Economics, and Manager of the Cafeteria.
William Thomas Craig, Instructor in Plant Breeding.
Montgomery Robinson, Litt.B., B.S., Instructor in Extension Teaching.
Arthur John Heinicke, B.S.A., M.A., Instructor in Pomology.
Olney Brown Kent, B.S., Instructor in Poultry Husbandry.
Harold Deane Phillips, A.B., B.S. in Agr., Instructor in Rural Economy.
Henry William Schneck, B.S., M.S.A., Instructor in Vegetable Gardening.
Wesley Worth Warsaw, B.S. in A.E., Extension Instructor in Soil Technology.
Karl John Seulke, M.S.A., Instructor in Animal Husbandry.
DeVoe Meade, B.S., Instructor in Animal Husbandry.
Edward Gardner Misner, B.S., Instructor in Farm Management.
Bernard William Shaper, B.S., Instructor in Extension Teaching.
Arthur Merle Besemer, B.S., Instructor in Dairy Industry.
Archie Byron Dann, B.S., Instructor in Poultry Husbandry.
Edwin Sleight Ham, B.S., Instructor in Animal Husbandry.
Thomas Alexander Baker, B.S., Instructor in Animal Husbandry.
James LeRoy Weimer, A.B., Extension Instructor in Plant Pathology.
Louis Melville Massey, Ph.D., Instructor in Plant Pathology.
Cornelia Ferris Kephart, M.S. in Agr., Instructor and Librarian in Department of Entomology.
Leon Augustus Hausman, B.A., Instructor in Meteorology.
Ellis Lore Kirkpatrick, B.S.A., Instructor in Vegetable Gardening.
Winfred Enos Ayres, Extension Instructor in Dairy Industry.
John Clarence McCurdy, B.S., C.E., Instructor in Farm Engineering.
William Emerson Mordoff, M.E., Instructor in Farm Mechanics.
Albert Scott Kenerson, B.S., Instructor in Vegetable Gardening.
Mary Frances Henry, A.B., Instructor in Home Economics.
Beulah Blackmore, Instructor in Home Economics.
Howard Bowman Ellenberger, B.S.A., Instructor in Dairy Industry.
Clark Leonard Thayer, B.Sc., Instructor in Floriculture.
Ralph Sylvanus Moseley, Extension Instructor in Poultry Husbandry.

Lewis Merwin Hurd, Extension Instructor in Poultry Husbandry.
Henry Joseph Conlin, A.B., Instructor in Agricultural Chemistry.
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Anson Wright Gibson, Instructor in Farm Practice.
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Frances Vinton, B.A., Instructor in Home Economics.
Albert Reiff Bechtel, A.M., Instructor in Botany.
John Phineus Benson, B.S., Instructor in Botany.
James Marshall Brannon, B.A., M.A., Instructor in Botany.
Frank Burkett Wann, A.B., Instructor in Botany.
Ray F. Pollard, B.S., Instructor in Farm Management.
Walter Gernet Krum, Extension Instructor in Poultry Husbandry.
Thomas Burr Charles, B.S., Instructor in Poultry Husbandry.
Charles S. Brewster, B.S.A., Instructor in Poultry Husbandry.
William Trowbridge Merryfield Forbes, Ph.D., Instructor in Entomology.
Stuart Ward Frost, B.S., Instructor in Entomology.
Wallace Larkin Chandler, B.S., M.S., Instructor in Parasitology.

THE NEW YORK STATE COLLEGE OF AGRICULTURE

SUMMER TERM

The college year in Cornell University is divided into two terms, or semesters, extending from the last of September to the early part of June. In the College of Agriculture there is, in addition, a third, or summer, term, coordinate with the present fall and spring terms.

The primary purpose of the summer term is to take advantage of the growing season in teaching certain subjects to students regularly registered in either graduate or undergraduate courses. The facilities of the College are available for graduate study throughout the summer. In addition, opportunity is provided for advanced students, teachers, and others, who are otherwise engaged during the regular school year, to have the advantage of a long period of special instruction. Particular attention is given to the needs of assistants and instructors in colleges of agriculture who desire to spend their summers in advanced study.

Registration for the summer term will take place on June 12, 1916, between the hours of 9 a. m. and 4 p. m. All students are expected to register first at the office of the University Registrar in Morrill Hall. They will then present themselves at the office of the Secretary of the College of Agriculture in Roberts Hall for further registration and arrangement of schedules. Instruction will begin at 8 a. m. on June 13. The summer term will close at 5 p. m. on September 27. No classes will be held on the forenoon of Commencement Day, June 21, or on July 4.

The requirements for admission to the summer term are stated on page 11.

THE COLLEGE OF AGRICULTURE

Cornell University is composed of eight colleges and the Graduate School. One of these colleges is the College of Agriculture.

Cornell University was chartered by the Legislature in 1865, being founded on the Land Grant Act of 1862. By the terms of the Land Grant Act, teaching in agriculture has been from the first a regular part of the University enterprise. In other states the state government has made appropriations to supplement the work in agriculture. In 1904 the Legislature of the State of New York made an appropriation of $250,000 for the erection of buildings for the College of Agriculture at Cornell University, and established the College as a state institution under the title "The New York State College of Agriculture at Cornell University." Before this time the State had established at Cornell University "The New York State Veterinary College." In 1906 the Legislature passed an Administration Act defining the purpose and activities of the College of Agriculture thus: "The object of the said college of agriculture shall be to improve the agricultural methods of the state; to develop the agricultural resources of the state in the production of crops of all kinds, in the rearing and breeding of livestock, in the manufacture of dairy and other products, in determining better methods of handling and marketing such products, and in other ways; and to increase intelligence and elevate the standards of living in the rural districts. For the attainment of these objects the college is authorized to give instruction in the

sciences, arts, and practices relating thereto, in such cases and in such manner as shall best serve the interests of the state; to conduct extension work in disseminating agricultural knowledge throughout the state by means of experiments and demonstrations on farms and gardens, investigations of the economic and social status of agriculture, lectures, publications of bulletins and reports, and in such other ways as may be deemed advisable in the furtherance of the aforesaid objects; to make researches in the physical, chemical, biological, and other problems of agriculture, the application of such investigations to the agriculture of New York, and the publication of the results thereof."

THE BUILDINGS AND FARMS

The buildings. The buildings erected under the enactment of 1904 were first occupied in June, 1907. The central group then erected consisted of a main administration and classroom building, an agronomy building, and a dairy building, the three being connected by covered loggias. Subsequently the Legislature provided for the erection of two large barns, a greenhouse, a home economics building, a forestry building, a poultry husbandry building, a soils building, an auditorium, and a classroom building and stock judging pavilion for animal husbandry.

Other buildings included in the present equipment are a frame building that temporarily houses the Department of Rural Engineering, an insectary, a biological station in the marsh at the south end of Cayuga Lake, a fish breeding house in Cascadilla Creek, a seed storage house, and other small buildings on the farms.

The farms. The College of Agriculture has 909 acres of land, and it rents 195 acres additional, making a total of 1104 acres under college management. These farms are run not for commercial but for educational purposes, and the practices are therefore modified to meet the varied demands of the institution.

Land in the vicinity of the College is very broken, abounding in hills and dales, brooks and gorges. In consequence, less than one-half of the total area is now available for tillage. Of the 1104 acres, 567 are classified as arable, 304 as pasture, and 143 as wood and waste; 51 are devoted to college grounds, buildings, and old orchards, and 39 are retained for other uses.

Of the tillable area, 45 acres have been laid out in permanent experiment plots for the use of the Departments of Soil Technology and Plant Breeding; 50 acres have been assigned to the Department of Pomology and are largely planted to young trees; 45 acres have been assigned to the Departments of Floriculture and Vegetable Gardening; 73 acres to the Department of Poultry Husbandry; 15 acres to farm-crop gardens and experiments; and there are left to the Department of Farm Practice 339 acres on which to conduct the regular farm operations.

The soil of the college farms is heavy, nearly all of it being Dunkirk clay loam. A few fields at the extreme southeastern corner are Volusia stony loam. The Dunkirk clay loam is entirely unsuited to potatoes and is not well adapted to corn, but will grow fair crops of corn if heavily manured. It is well adapted to wheat, oats, timothy, and clover. The Volusia stony loam when well drained and freed from stones is well adapted to corn and potatoes. The recently acquired areas lack both these improvements.

EXPENSES

Tuition in the College of Agriculture is free to both graduate and undergraduate students who for a year or more immediately preceding matriculation have been residents of the State of New York. The annual tuition fee for students from outside the State is $125 for two terms. The tuition fee for the summer term is $62.50.

Other fees, required of all students, are as follows:

Matriculation fee	$ 5.00
Fee for baccalaureate degree	10.00

Deposit fees are required in various laboratory courses; inquiry concerning these should be made before registration. Students are liable to a special charge for breakage or damage resulting from their own carelessness. Attention is called to the expenses of excursions required in various courses.

The expense of textbooks, instruments, and other necessary articles varies from $10 to $75 a year.

There are many private boarding and rooming houses near the University campus. In these the cost of board and furnished room, with heat and light, varies from $5 to $12 a week. By the formation of clubs, students are sometimes able to reduce their expenses for room and board.

GENERAL INFORMATION CONCERNING COURSES

The regular instruction in the College of Agriculture constitutes a course of four years, or eight terms, leading to the degree of Bachelor of Science. There is a combined course with the State Veterinary College comprising seven years and leading to two baccalaureate degrees. Summer courses in agriculture, designed especially for teachers, school principals and superintendents, and college students, are offered in the six-weeks Summer Session of the University. Aside from these there are winter courses without University credit, and opportunities for students to pursue special work. Circulars describing the winter courses and the short summer courses may be obtained on application to the Secretary.

Students may pursue agricultural subjects in the Graduate School of the University. For full information concerning graduate work and degrees, see the Announcement of the Graduate School.

THE REGULAR FOUR YEAR COURSE

Men who are candidates for admission to the regular, or four year, course must be at least sixteen years of age; women must be at least seventeen years of age. They must have certificates of good moral character, and students from other colleges or universities are required to furnish from those institutions certificates of honorable dismissal. Students are admitted on examination, or on presenting credentials of the Education Department of the State of New York, or on acceptable school certificates.

Prospective students who have neither lived on farms nor had considerable practical experience in agriculture are urged to spend at least one year on a well-managed farm in order to familiarize themselves with common farm affairs and operations before entering the College. This experience is imperative in order to pass the farm-practice requirements.

Candidates for admission must file their credentials and obtain permits for examination at the University Registrar's office, Morrill 10. The results of examination may be ascertained from the Registrar.

ENTRANCE REQUIREMENTS FOR THE FOUR YEAR COURSE

The subjects that may be offered for admission are named in the following list; the figure in parenthesis following each subject indicates its value in units and shows the maximum and the minimum amount of credit allowed in the subject. A unit represents five recitations a week for one year in a study.

1a. English No. 1 ..... (1½)
1b. English No. 2 ..... (1½)
2a. First Year Greek ..... (1)
2b. Second Year Greek ..... (1)
2c. Third Year Greek ..... (1)
3a. First Year Latin ..... (1)
3b. Second Year Latin ..... (1)
3c. Third Year Latin ..... (1)
3d. Fourth Year Latin ..... (1)
4a. First Year German ..... (1)
4b. Second Year German ..... (1)
4c. Third Year German ..... (1)
5a. First Year French ..... (1)
5b. Second Year French ..... (1)
5c. Third Year French ..... (1)
6a. First Year Spanish ..... (1)
6b. Second Year Spanish ..... (1)
6c. Third Year Spanish ..... (1)
7a. First Year Italian ..... (1)
7b. Second Year Italian ..... (1)
7c. Third Year Italian ..... (1)
8a. Ancient History ..... (½–1)
8b. Modern and Medieval History ..... (½–1)
8c. American History, Civics ..... (½–1)
8d. English History ..... (½–1)
9a. Elementary Algebra ..... (1)
9b. Intermediate Algebra ..... (½)
9c. Advanced Algebra ..... (½)
9d. Plane Geometry ..... (1)
9e. Solid Geometry ..... (½)
9f. Plane Trigonometry ..... (½)
9g. Spherical Trigonometry ..... (½)
10. Physics ..... (1)
11. Chemistry ..... (1)
12. Physical Geography ..... (½–1)
13. Biology* ..... (1)
14. Botany* ..... (½–1)
14a. Zoology* ..... (½–1)
15. Bookkeeping** ..... (½–1)
16. Agriculture (including home economics)** ..... (½–4)
17. Drawing ..... (½–1)
18. Manual Training ..... (1)
19. Any high school subject or subjects not already used (½–1)

For admission to the New York State College of Agriculture, an applicant must offer either A or B as below:

A. Fifteen units arranged as follows: English (3), history (1), elementary algebra A (1), plane geometry (1), a foreign language† (3), elective (6). Solid geometry and plane trigonometry are recommended among the elective units for students entering the courses of forestry or landscape art.

B. The Arts College Entrance Diploma or the Science College Entrance Diploma issued by the Education Department of the State of New York.

Requirements for Admission of Special Students

Opportunities are provided for persons who desire to pursue special studies. In order to be eligible for admission to special work, applicants must offer two full years of recent farm experience and must also either have fifteen units of entrance credits or be twenty-one years of age. In addition, applicants for admis-

*If an applicant has counted Biology (1) he may not also offer Botany (½) or Zoology (½).
**An applicant may offer not to exceed four units in vocational subjects under numbers 16, 18, and 19 combined. Bookkeeping may not be offered together with more than one of the subjects listed under 16, 17, and 18.
†French or German is recommended for entrance. For the Graduate School requirement with reference to a reading knowledge of French and German, see page 6 of the Announcement of the Graduate School.

sion on the age requirement must satisfy the faculty of their ability to handle the work; and every applicant must satisfy the faculty of his bona fide desire for special study. He will be required to present an honorable dismissal from the school last attended, certificates of good moral character, and such other certificates and letters as may be desired. The special work is designed to meet the needs of young men and young women from farms who have not time for a four year course, and of mature persons who desire to spend a brief period in specialized study. The work is not a definite "course" in the sense of having a program or a prescribed set of studies. The student chooses any of the agricultural "electives" that he is fitted to pursue. Certain courses are given by some of the departments for students who lack some of the fundamental work usually required in those subjects. Admission as a special student does not admit to classes. The student is admitted to the various classes by the heads of the departments concerned.

Requirements for Admission to the Summer Term

Applicants for admission to the summer term as regular students in the four year college course must, in addition to satisfying entrance requirements in full, have completed all the required work of the first two years of the regular course as outlined on pages 12–13, or the substantial equivalent thereof. Special students are admitted to the summer term on the same basis as to other terms, as recited above.

Other Details for Admission

For other details as to subjects and methods for admission, see the General Circular of Information, which may be obtained on application to the Secretary, Cornell University, Ithaca, New York.

For admission to advanced standing from other colleges and universities, all communications should be addressed to the Registrar of the University. See the General Circular of Information.

For admission as a special student, communications should be addressed to the Secretary, College of Agriculture, and attention is called to the paragraphs on pages 28 and 29 of the General Circular of Information.

For admission to graduate work and candidacy for advanced degrees, communications should be addressed to the Dean of the Graduate School.

Requirements for the Degree of Bachelor of Science

The requirements for the degree of Bachelor of Science shall be residence for eight terms, and, in addition to the prescribed work in the Department of Physical Culture and of Military Science and Tactics, the completion of one hundred and twenty hours of required and elective work as outlined on pages 12–13.

All men students, except those whose record and registration at the beginning of the senior year show that they are specializing to the extent of fifteen hours in home economics, forestry, that is, professional students in forestry, landscape art, or entomology, must fully satisfy, before the beginning of the senior year, the requirements in farm practice. All men students are required to report to the Department of Farm Practice within the first three weeks of the first term in the College.

A student admitted to the College of Agriculture from another college in Cornell University, or from any other institution of collegiate rank, will be regarded as having completed the number of terms and hours to which his records entitle him, and will receive all the privileges of students who have completed the same number of terms and hours by residence in the College. In order, however, to obtain the degree of Bachelor of Science, he must have completed the prescribed subjects in the four year course and the requisite number of elective hours in agricultural subjects. He must also have been in residence in the College of Agriculture for at least two consecutive terms and have completed not less than fifteen hours a term, of which two-thirds, at least, must be subjects taught by the staff of the College of Agriculture.

A student must register for at least twelve hours each term, and no new student may register for more than eighteen hours. Maximum registration by old students is determined on the basis of record.

Regular students may take at their discretion during their four years not to exceed twenty hours of elective subjects in courses offered in other colleges than Agriculture; but such elective subjects shall not interfere with required or back work. Special students must take at least two-thirds of the entire work of each year from subjects taught by members of the staff of Agriculture.

The Course Leading to the Degree of Bachelor of Science

Freshman year	Number of course	Hours 1st term	Hours 2d term
English	1	4	4
Chemistry	1	6	–
Chemistry	85 or 6	–	4 or 5
Biology	1	3	3
The Farm		2	–
Physics	2		5
Electives*		0–3	4–7
Total		15–18	15–18

Sophomore year	Number of course	Hours 1st term	Hours 2d term
Geology**	1	3	–
Chemistry***	85		4
Physiology,**** one of the following:			
Physiology of domestic animals	12	–	3
Human physiology	3	–	3
Plant physiology	20 or 21	–	4
Botany or Zoology	1	5	–
Botany or Zoology	1	5	–
Electives		7–10	6–11
Total		15–18	15–18

*Professional students in forestry who do not offer solid geometry and plane trigonometry for entrance are required to take these subjects in their freshman year.

**Optional for students taking a major in home economics.

***Required of students taking Chemistry 6 in the freshman year.

****May be taken in junior or senior year by special permission.

In addition to the above, the required work in military drill and physical training must be taken.

Political Science 51 may be taken this year.

Junior year	Number of course	Hours 1st term	Hours 2d term
Political Science	51	3	3

Elective Subjects and Group Requirements

The remainder of the work is made up of electives to be taken under the following restrictions:

A student may take at his discretion during his four years not to exceed twenty hours of elective subjects in courses offered in other colleges than Agriculture; but such elective subjects shall not interfere with required or back work. The remainder of his elective work must be offered from subjects taught by members of the staff of Agriculture.

In selecting the subjects in the major group in Agriculture, the student must obtain the advice and approval of a professor or an assistant professor having charge of a subject within the group and preferably within the department in which he expects to specialize, who shall be chosen by the student at the beginning of the sophomore year. Students expecting to specialize in forestry, landscape art, home economics, or rural education must take as their advisers professors or assistant professors in those departments.

All students must have passed before graduation at least fifteen hours of agricultural electives in one of the groups named below, and at least three hours in each of three of the other groups:

Group A—Farm Crops
- Pomology
- Soil Technology
- Floriculture
- Vegetable Gardening

Group B—Animal Husbandry
- Poultry Husbandry
- Dairy Industry
- Entomology

Group C—Agricultural Chemistry
- Botany
- Plant Breeding
- Plant Pathology
- Meteorology

Group D—Rural Economy
- Rural Education
- Farm Management
- Extension
- Rural Engineering
- Drawing

Group E—Forestry
- Home Economics
- Landscape Art

DEPARTMENTS OF INSTRUCTION

BOTANY

6a. **Taxonomy of the Higher Plants.** Credit four hours. Prerequisite course 1 or its equivalent. Lectures, M, 9. Roberts Hall 292. Laboratory, W, 8–1, 2–5. Agronomy Building, Botanical Laboratory. Remainder of the work by appointment. Professor WIEGAND and Mr. METCALF.

Identification, classification, and ecology of the seed plants and ferns: a detailed study of the local flora about Ithaca with reference to the identification of species and varieties, to the classification and nomenclature of local plants, and to a study of their floral and foliar characteristics. The course consists largely of field and laboratory work, but is supplemented by general discussions and lectures on the broader questions of classification, nomenclature, distribution, and habitat. The ecological associations and modifications of the various species and varieties will be noted. Instruction will be given in the preparation of an herbarium and in the preparation of keys. Laboratory fee, $3.50.

7. **Weeds and Weed Seeds.** Credit two hours. Prerequisite course 1 or its equivalent. Lectures, M, 11. Laboratory, Th, 2–5. Agronomy Building, Botanical Laboratory. Professor WIEGAND and Mr. METCALF.

This course is designed to meet the needs of students of agriculture who wish to obtain a working knowledge of weeds and weed seeds. It will also aid persons intending to teach nature study and agriculture in the schools. Laboratory fee, $1.50.

9. **Histology.** Credit four hours. Prerequisite course 1 or its equivalent. Lectures, F, 11. Laboratory, T Th F, 8–10.30. Agronomy Building, Botanical Laboratory. Assistant Professor EAMES and Mr. MACDANIELS.

This course is designed to give a knowledge of the structure and morphology of plant tissues and organs. Emphasis will be placed on the relation of structure to function, and on the modifications due to phylogenetic development and to ecological factors. Traumatic and pathogenic tissues, and the effect of parasitism, symbiosis, and other factors on the various tissues, will be studied. Laboratory work will include methods and practice in microtechnique. Laboratory fee, $5.

18. **Research in General Botany, Histology, and Taxonomy.** Credit not less than three hours, by appointment. Professor WIEGAND and Assistant Professor EAMES.

A course designed for graduates and advanced students. Original investigation by students who are adequately prepared. The laboratory fee depends on the nature of the work.

19. **Seminary in Taxonomy, Morphology, Cytology, and Histology.** Credit one hour. Credit restricted to graduate students in the Department. Hours to be arranged. Professor WIEGAND.

Broad problems pertaining to botany will be discussed, literature will be reviewed, and reports of research will be given.

21a. **Plant Physiology, Advanced Course.** Credit five hours. Prerequisite training in botany and chemistry, to be determined in each case by the instructor. Lectures, M F, 8 (at 7 if the class so desires). Agronomy Building 192. Laboratory, M F, 10–1. Assistant Professor KNUDSON.

Topics include nutrition, osmotic pressure, permeability, absorption, conduction, transpiration, toxicity, and photosynthesis. Laboratory fee, $6.

21b. **Plant Physiology, Advanced Course.** Credit five hours. Prerequisites as for 21a. Lectures, T Th, 8 (at 7 if the class so desires). Agronomy Building 192. Laboratory, T Th, 10–1. Assistant Professor KNUDSON.

Topics include metabolic products, digestion, translocation, respiration, fermentation, growth, stimulation, reproduction, and plant response. Laboratory fee, $6.

These two courses are the equivalent of course 21, the credit for which is five hours in both fall and spring terms. The present division into two courses is arbitrary, one course representing the work of the fall term and the other representing that of the spring term. These courses are designed primarily for advanced or graduate students, and especially for those specializing in plant study. Lectures and laboratory work are supplemented by written reports. Students may take both 21a and 21b in the third term, or either may be taken alone.

30. **Special Chapters in Metabolism.** Credit one hour or more. Lectures and laboratory. Assistant Professor KNUDSON.

A study of some of the more important temporary and storage products of plant metabolism. Open only to graduates, or to undergraduates who have had course 21 and organic chemistry.

31. **Seminary in Plant Physiology.** Credit one hour. Limited to graduates taking work in the Department. Conferences, hours to be arranged. Agronomy Building 192. Assistant Professor KNUDSON.

Topics will be chosen from current work in plant physiology.

33. **Research, Plant Physiology.** Credit for major or minor, otherwise not less than four hours. Prerequisite adequate training in botany, chemistry, and physiology. By appointment. Agronomy Building 101. Assistant Professor KNUDSON.

Problems in plant physiology and in the general relation of plant physiology to agriculture will be assigned for investigation. Reports on these will be required. The amount of the laboratory fee is governed by the nature of the work.

DRAWING

2b. **Free-hand Drawing and Outdoor Sketching.** Credit two to five hours. Lectures during practice. Practice by appointment. M W F S, 8–12, T Th, 2–5. Dairy Building 371. Professor BAKER.

While this course is designed more particularly to meet the needs of the students of landscape art, being out-of-door study of foliage, tree-growth, and architecture, provision is also made for the needs of the general student of free-hand drawing and of teachers of the subject in the secondary schools.

ENTOMOLOGY, LIMNOLOGY, AND NATURE STUDY

2. **The Ecology of Insects.** Credit three hours. One lecture and two practical exercises, largely field work. Lectures, W, 8. Roberts Hall 392. Practical exercises, one W, 10–12.30, and one by appointment. Professor NEEDHAM and Messrs. LLOYD and LOBDELL.

A general course in the study of the lives of insects in relation to their environment. Practical studies will be made of the activities of insects and of the rôle that they play in different natural associations. Observations will be made on the relations between their structures and instincts and the situations in which they live, and on many of the ways in which they find a living and establish homes. Laboratory fee, $2.50

3. **General Entomology.** Credit three hours. Prerequisite course 1 or Zoology 1. Lectures, M W, 9. Roberts Hall 392. Practical exercises, W Th, 2–4.30. Roberts Hall 392. Assistant Professor MATHESON and Mr. FROST.

Lectures on the characteristics of orders, suborders, and the more important families, and on the habits of representative species. The practical exercises include a study of the structure of insects and practice in their classification. The lectures only (credit two hours) are taken by those who have had courses 4 and 5. When possible the laboratory work will utilize materials collected by the student in the field. Laboratory fee, $1.50.

4. **Elementary Morphology of Insects.** Credit four hours. Th, 9, and eleven additional hours by appointment. Roberts Hall 391. Assistant Professor BRADLEY and Mr. HESS.

An introductory laboratory course required of all students planning to take advanced work in entomology. Includes an introduction to the method of phylogenetic study as illustrated by the wings of insects (formerly included in course 5). Laboratory fee, $3.

Students who wish to take course 5 during the term in which they are taking this course may complete course 4 during the first twelve weeks of the term by taking fifteen hours a week.

5. **Elementary Systematic Entomology.** Credit one or two hours. Prerequisite course 4. Th F, 10–1. Roberts Hall 301. Assistant Professor BRADLEY and Mr. ———.

Practice in the identification of insects.

The completion of forty-five or ninety hours of work in the laboratory will be required. Laboratory fee, $2 or $3.

This course may most advantageously be taken in combination with course 10.

Course 4 and one hour of course 5 are required of all students who plan to take advanced work in entomology. They may both be taken in one term by taking fifteen hours of work a week in the laboratory and thereby completing course 4 during the first twelve weeks of the term.

10. **Entomotaxy.** Credit two or three hours. Prerequisite course 4, should be accompanied by course 5. Laboratory and field work, W F, 2–5, and for three-hour students, Th or F, 10–1. Roberts Hall 301. Assistant Professor BRADLEY.

Methods of collecting insects and of preserving them for study and the cabinet, together with other matters of technique. Practice in the identification of the insects of the local fauna. Two all-day field trips will be required.

A week of field work open to students in this course will be arranged for those who wish it. During the summer of 1916 this will be held August 21–28 in the Adirondack Mountains.

12. **Taxonomy of Insects.** Credit four hours. Prerequisite courses 3, 4, 5, 11, 14, and 20, and preferably 10. Lectures, F, 8. Laboratory, F, 10–1, and two other periods of three hours each to be arranged. Assistant Professor BRADLEY, Professors NEEDHAM, JOHANNSEN, and W. A. RILEY, Assistant Professor MATHESON, Mr. LLOYD, and cooperating specialists.

This course will continue throughout a number of terms, but the work of each term may be elected independently. The course is intended primarily for graduate students who desire a systematic survey of one or more of the orders of insects.

F. Neuropteroids. Professors NEEDHAM and BETTEN, and Messrs. LLOYD and NAKAHARA.

[I. Hymenoptera. Assistant Professor BRADLEY. Summer of 1917.]

19. **Research in Systematic Entomology.** Credit three or more hours a term. Prerequisite courses 3, 10, 11, 14, 20,* and one term of course 12. Laboratory hours by arrangement. Roberts Hall 301. Assistant Professor BRADLEY, Professors NEEDHAM and JOHANNSEN.

29. **Research in Morphology of Insects.** Credit three or more hours. Prerequisite courses 3, 4, and 5. Laboratory open daily except S, 8–5; S, 8–1. Roberts Hall 391. Professors W. A. RILEY and NEEDHAM.

Special work arranged with reference to the needs and attainments of each student. Laboratory fee, $1.50 an hour.

40. **Advanced Economic Entomology and Insectary Methods.** Credit three hours. Open only to graduates. Seminary, T, 2–4.30. Field and laboratory work by appointment. Insectary. Assistant Professor MATHESON.

Economic problems connected with applied entomology will be discussed and reported on, and field observations will be made. Experimental methods in breeding, photographing, investigating, and controlling insects will be discussed and studied. Designed for advanced students in entomology who desire to fit themselves for experiment station work. Laboratory fee, $2.50.

49. **Research in Economic Entomology.** Credit three or more hours. Prerequisite courses 3, 4, 5, 11, and 14.* Laboratory and field work by appointment. Insectary. Professor HERRICK and Assistant Professor MATHESON.

In most cases it is impracticable to complete an investigation in this subject during the college year. Students must arrange to conduct their observations during the growing season.

50. **General Limnology.** Credit three hours. Open only to students who have taken or are taking course 3 and Biology 1, or the equivalent. Lectures, Th, 8. Roberts Hall 392. Laboratory, one Th, 2–4.30, and one by appointment. Roberts Hall 492. Professor NEEDHAM and Mr. LLOYD.

An introduction to the study of the life of inland waters. Aquatic organisms in their qualitative, quantitative, seasonal, and ecological relations. Laboratory fee, $2.50.

59. **Research in Limnology.** Credit three or more hours. Prerequisite course 50 or its equivalent. Laboratory and field work by appointment. Roberts

*For courses not given during the summer term, see the regular announcement for the academic year.

Hall 492 and Biological Field Station. Professors NEEDHAM and W. A. RILEY, and Assistant Professor EMBODY.

Seminary. M, 4.30–5.30. Roberts Hall 392.

The work of an entomological seminary is conducted by the Jugatæ, an entomological club which meets for the discussion of the results of investigations.

Summer Field Trip. A summer field trip will be held August 21–28, 1916, in the Adirondack Mountains. This trip is designed primarily for students in entomotaxy course 10 but will be open by permission to all graduates and properly qualified undergraduates in the Department who can make satisfactory arrangements for the carrying forward of their regular work.

FARM CROPS

2. **Farm Crops, Advanced Course.** Credit four hours. Prerequisite course 1. Lectures, M T W, 8. Roberts Hall 292. One recitation per week to be arranged. Professor MONTGOMERY.

The object of this course is to study the more important principles of crop production, based on experimental evidence. Both cereal and forage crops are studied. An effort is made to acquaint the student with the best sources of literature, especially the work of experiment stations. About six hours per week reference reading is required.

FARM MANAGEMENT

2. **Farm Management.** Credit four hours. Open to students who have passed the farm practice examination. This course is designed for students who have had considerable farm experience. It should be taken near the end of the student's college course. Lectures, M W F, 10. Dairy Building 222. One laboratory period a week, T, 2–4.30. Farm Management Building 102. On days when farms are visited, laboratory work may last longer than two and one-half hours. Professor LIVERMORE.

Lectures, recitations, and laboratory practice. Farming as a business; labor income; size, diversity, and production of business; regions and types of farming; cropping systems; farm layout; building arrangement; efficient use of labor, horses, and machinery; marketing; forms of tenures and leases; organization and management of successful farms; ways of starting farming; use of capital and credit; choosing and buying a farm; planning, organization, and management of specific farms. A one-day excursion to farms at some distance from Ithaca will be made about September 5. Laboratory fee, $1.

FARM PRACTICE

1. **Farm Practice.** Without credit toward graduation. Hour and place by appointment. Professor KING and Mr. MOULTON.

An elective course designed to assist students in meeting the requirements in farm practice demanded by the College. In order to meet these requirements, students must have a practical knowledge of horses, cattle, sheep, swine, poultry, crops, farm machinery, orcharding, gardening, butter and cheese making, and the like. All men students except those whose record and registration at the beginning of the senior year show that they are specializing to the extent of

fifteen hours in home economics, forestry, landscape art, or entomology, must fully satisfy, before the beginning if the senior year, the requirements in farm practice. The Department of Forestry requires three months of forestry practice in lieu of the farm practice requirement. All men students are required to report to the Department of Farm Practice as assigned within the first three weeks of their first term in the College.

FLORICULTURE

3. **Commercial Floriculture.** Credit four hours. Prerequisite course 1 or commercial experience, and course 2. Lectures and recitations, M W F, 9. Practice, W, 2–4.30. Greenhouses. Assistant Professor LUMSDEN.

Studies in the propagation and culture of florists' crops. As far as possible practical work will be given in the propagation and culture of roses, carnations, violets, orchids, and other plants grown for commercial purposes. Methods of packing, shipping, and marketing will be considered. Laboratory fee, $2.

5. **Greenhouse and Garden Practice.** Credit one or two hours. Prerequisite course 1, and permission to register. Practice by appointment. Greenhouses and gardens. Mr. THAYER.

Designed to give students a wider experience in the practice of flower growing. The course consists of practical work in all branches of greenhouse management. Reports of work done are required.

8. **Garden Flowers.** Credit three hours. Lectures, T Th, 9. Practice, T or Th, 2–4.30. Greenhouses and gardens. Assistant Professor LUMSDEN and Mr. THAYER.

A study is made of the identification, propagation, and culture of annuals, herbaceous perennials, and roses. It is aimed to give the student an intimate knowledge of those forms of annual and herbaceous plants that may be used in garden planting either on home grounds or in public parks. An excellent collection of plant material is available for demonstration work in this course. All members of this class will be required to participate in an excursion to the Thompson estate at Canandaigua on August 12. Laboratory fee, $2.

8a. **Grouping and Arrangement of Annuals and Herbaceous Perennials.** Second and third terms, credit two hours a term. Prerequisite course 8 and Botany 1. Lectures, S, 9. Practice, S, 10.30–1. Assistant Professor LUMSDEN.

A study of the principles and methods of arrangement of garden flowers in the border and flower garden. The planting of borders for a continuous display of bloom throughout the season. Æsthetic taste in color arrangement will also be studied. Laboratory fee, $2.

9. **Amateur Floriculture.** Credit two hours. Lectures, F, 9. Practice, S, 10.30–1. Greenhouses. Mr. THAYER.

The propagation and culture of potted plants in the home—plants suitable for window gardening and for outdoor home gardening. The course includes a study of containers, soils, fertilizers, and insecticides; also the preparation and planting of flower beds. It is planned primarily for students who are interested especially in home economics, but is open to any one desiring information regarding simple methods of plant culture. Laboratory fee, $2.

12. **Investigation in Floriculture.** Credit, one, two, or three hours. Prerequisite courses 1, 3, and 4, and permission to register. Designed primarily for upperclassmen and graduate students. Consultation by appointment. Professor BEAL and Assistant Professor LUMSDEN.

The investigation of problems in growing flowers for cutting, exotics, garden flowers, and the like.

FORESTRY

The first six weeks of the summer term will be spent at Ithaca; the remainder of the term will be spent in camp on a forest tract, in Saratoga County in the summer of 1916.

The following courses of instruction will be offered:

Group A		
	Forestry 9	Forest Utilization
	Forestry 11	Forest Mensuration
	Forestry 14	Silviculture: Forest Ecology
	Forestry 15	Silviculture: Natural Reproduction and Care of the Forest
Group B		
	Forestry 20	Forest Management
	Forestry 22	Seminary
	Forestry 23	Advanced Work
	Forestry 24	Research

For the professional forestry student, the courses in Group A will constitute the first term's work of the senior year. During the following term, these students are expected to obtain the required practical experience, returning to Ithaca to complete undergraduate work in the second term. Courses in Group B are offered for graduate students.

Courses 9, 11, 14, 15, and 20 will hereafter be given for professional forestry students during the third, or summer, term only, because of the obvious advantages of the season and place of work.

In the following program, the designated hours and rooms apply to work in Ithaca. A special camp schedule is to be arranged.

9. **Forest Utilization.** Credit four hours. Lectures, M T W Th F, 11. Forestry Building 122. Practice in forestry camp latter part of term. Professor RECKNAGEL.

The principal industrial uses of timber; logging methods and equipment; logging in representative regions; manufacture of lumber; determination of stumpage values; timber sale contracts; timber sale administration, including marking, brush disposal, and scaling in practice; minor industries; utilization of forest products other than wood, as grazing range, fish and game, and the like.

11. **Forest Mensuration.** Credit five hours. Lectures, M T W, 8. Forestry Building 126. Practice, M, 2–4.30. Forestry Building 118, and in camp. Assistant Professor BENTLEY.

Measurement of logs and standing timber; timber cruising; study of the rate of growth of timber; volume and yield tables. Laboratory fee, $1.50.

14. **Silviculture: Forest Ecology.** First six weeks. Credit three hours. Prerequisite Botany 1 or its equivalent. Lectures, M T W Th F, 10. Forestry Building 122. Practice, W, 2–4.30, S, 8–1. Forestry Building 8. Professor SPRING.

The influence of site on the forest and of the forest on site; the behavior of trees as members of a forest community. Laboratory fee, 50 cents.

15. **Silviculture: Natural Reproduction and Care of the Forest.** Last ten weeks. Credit three hours. Prerequisite courses 13 and 14. Lectures and practice to be arranged. Professor SPRING.

A technical discussion of the silvicultural systems as practiced in Europe, and the possibility of using them in each of the forest regions of the United States and Canada; improvement cuttings, thinning and underplanting; marking timber for cutting.

20. **Forest Management.** Credit five hours. Open only to graduate students. Lectures, daily, 9. Forestry Building 126. Practice in forestry camp. Professor RECKNAGEL.

Forest organization, including foundations of working plans; regulation of yields, and the formulating of working plans; forest finance, including forest valuation (the ascertainment of values) and forest statics (the comparison of values).

22. **Seminary.** Credit two hours. Open only to graduate students. Hours to be arranged. Forestry Building 126. Professors HOSMER, SPRING, and RECKNAGEL, and Assistant Professor BENTLEY.

23. **Advanced Work.** Credit two or more hours. Open to undergraduate and graduate students who have had the necessary training. Hours by appointment. Professors HOSMER, SPRING, and RECKNAGEL, and Assistant Professor BENTLEY.

Individual advanced study of designated topics.

24. **Research.** Credit three or more hours. Open only to graduate students who have had the necessary training. Hours by appointment. Professors HOSMER, SPRING, and RECKNAGEL, and Assistant Professor BENTLEY.

LANDSCAPE ART

13. **Elements of Planting Design.** Credit five hours. Prerequisite Botany 1. Lectures, M, 8. Practice and field trips with criticism, M F, 10–1 and 2–5. Landscape Art Building. Assistant Professor CURTIS.

A study of the identification and characteristics of trees, shrubs, and vines used in landscape planting, together with the elementary principles of their composition.

This work has been planned in consultation with the Departments of Drawing and Floriculture, so that a total registration of 13 hours may be secured as follows: Floriculture, 3 hours; Drawing, 5 hours; Landscape Art, 5 hours. This instruction enters into the regular Landscape Art schedule and carries full-term credit toward graduation. Laboratory fee, $1.

PLANT BREEDING

6. **Plant Breeding, General Course.** Credit four hours. Prerequisite Biology 1 and Botany 1. Lectures, W F, 9. Recitations, M, 9. Forestry Building 210. Laboratory, M, 2–4.30. Forestry Building 206. Assistant Professor BARKER and MR. FRASER.

A general introductory course treating of variation, the laws of heredity, and selection. Equivalent to courses 1 and 2. Laboratory fee, $3.

13. **Plant Breeding, Advanced Course.** Credit three hours. Prerequisite course 8. Lectures, T Th, 9. Forestry Building 210. Laboratory, W, 2–4.30. Assistant Professor BARKER and Mr. FRASER.

An advanced course for seniors and graduates treating of the philosophy of variation and evolution, the laws of heredity, and the experimental methods of research. Laboratory fee, $3.

PLANT PATHOLOGY

1. **Plant Pathology.** Credit one, three, or four hours. Prerequisite Botany 1 and 20 or equivalents. Lecture, credit one hour, Th, 10. Roberts Hall 292. Must accompany or follow recitations and practice. Recitations and laboratory periods in limited sections as follows:

GENERAL AGRICULTURAL SECTION: Credit three hours. Recitation, F, 12. Agronomy Building 192. Practice, W F, 2–4.30. Bailey Hall, West Basement.

POMOLOGY SECTION: Credit three hours. Recitation, F, 12. Roberts Hall 292. Practice, Th, 2–4.30, S, 8–10.30. Bailey Hall, West Basement.

Professor WHETZEL, Assistant Professor HESLER, and Messrs. CHUPP and BRAUN.

A fundamental course treating of the nature, cause, and control of plant diseases, illustrated by studies of the commoner diseases of cultivated crops. Students specializing in those lines indicated by the names of the sections will be expected to schedule their work accordingly. The practice work must be taken in the couplets announced above. Practice sections limited to twenty-four students each. Laboratory fee, $4.50; breakage deposit, $2.

2. **Principles of Plant Disease Control.** Credit three hours. Recitation, Th, 12. Home Economics Building 100. Practice, Th, 2–4.30, S, 10.30–1. Bailey Hall, West Basement. Professor WHETZEL, Assistant Professor HESLER, and Messrs. CHUPP and BRAUN.

A consideration of the principles and the methods of control of plant diseases. This will include studies on: exclusion by laws, regulations, quarantine, and inspection; eradication by pruning, seed selection, tree surgery, rotation, disinfection, and other means; protection by spraying, dusting, wound dressing, and the like; immunization by selection, breeding, feeding. The practice sections must be taken in the couplets announced above. Laboratory fee, $4.50; breakage deposit, $2.

6. **Cryptogamic Parasites.** Credit three hours. Prerequisite Botany 1 or equivalent and permission to register. Not offered to a class of less than five students. Lectures, T, 11. Home Economics Building 100. Practice, M T, 2–4.30. Bailey Hall, East Basement. Assistant Professor HESLER and Mr. BRAUN.

Comparative studies of the morphology, life history, and classification of parasitic fungi, slime moulds, and bacteria. A general introductory course in mycology for undergraduates. Laboratory fee, $4.50; breakage deposit, $2.

20. **Research.** Credit not less than three hours. Professor WHETZEL, and Assistant Professors STEWART and HESLER. Laboratory fee, $1.50 per hour.

POMOLOGY

10. **Systematic Pomology.** Credit two hours. Prerequisite courses 1, 1a, and 8, and Botany 1. Lectures or recitations, F S, 8. Roberts Hall 292. After August 15, a laboratory period, S, 8–10.30, is substituted for the Saturday lecture. Messrs. HEINICKE and CARRICK.

A study of the botanical and physiological characteristics of all species of fruit-bearing plants, with special reference to their cultural requirements.

The characteristic cultural methods of each fruit not discussed in a previous course are considered. Each student is required to collect and mount specimens of a number of varieties and species.

19. **Research.** Credit from one to three hours. Open to graduate or other students who have had courses 10, 12, and 12a, Botany 1 and 20, Plant Pathology 1, Entomology 3, and Chemistry 1 and 30 or 32. Professor CHANDLER and Mr. HEINICKE.

POULTRY HUSBANDRY

1. **Poultry Husbandry.** Credit three hours. Lectures, T Th, 11. Poultry Building 375. Practice, W, 2–4.30. Poultry Building 300. Professor RICE, Assistant Professor BENJAMIN, and Messrs. KENT, DANN, and HEUSER.

An introductory and prerequisite course for students desiring to take specialized courses in poultry husbandry. Those desiring a general course should see courses 2a, 3, 3a, and 10. The course includes the anatomy and physiology of poultry; the study of the egg; embryology; nomenclature; bibliography; environmental conditions; the history and scope of poultry husbandry.

2a. **Flock and Plant Management.** Credit one hour. Must be preceded or accompanied by course 2 or 10, and preferably also by Animal Husbandry 1. Practice periods and extra time arranged by appointment. Practice, three short periods a day, including Sunday, for four weeks: morning, 7.45–8.30; noon, 12.45–1.15; night, 4.30–5. Poultry Building. Messrs. DANN and ANDREWS.

Record keeping, and management of fowls for egg production and for fattening, including preparation for market. Assigned reading and a written examination will be required.

3. **Incubator Practice.** Credit one hour. Must be preceded or accompanied by courses 1 and 1a, or by course 10. Practice periods and extra time arranged by appointment. Practice, three short periods a day, including Sunday, for four weeks: morning, 7.45–8.30; noon, 12.45–1.15; night, 4.30–5. Poultry Building. Professor RICE and Mr. BUCHAN.

Practice in operating incubators; testing eggs, keeping records, and taking apart and setting up machines. Assigned reading and a written examination will be required.

3a. **Brooder Practice.** Credit one hour. Must be preceded or accompanied by courses 1 and 1a, or by course 10. Practice period and extra time arranged by appointment. Practice, three short periods a day, including Sunday, for four weeks: morning, 7.45–8.30; noon, 12.45–1.15; night, 4.30–5. Poultry Building. Professor RICE and Mr. BUCHAN.

The management of a brooder and a flock of chickens; the keeping of temperature, food, and growth records. Assigned reading and a written examination will be required.

7a. **Marketing Practice.** Credit one hour. Prerequisite course 7 and permission to register. Discussion hour, T, 4.45–5.45. Poultry Building 325. Practice periods arranged by appointment. Poultry Building 100. Assistant Professor BENJAMIN and ———.

This course is to accompany or supplement course 7 for those who desire additional instruction in the handling of poultry products and refrigeration machinery, and in general salesroom work.

10. **Farm Poultry.** Credit three hours. Lectures, M W, 11. Poultry Building 375. Laboratory, M, 2–4.30. Poultry Building 300. Professor RICE, Assistant Professor BENJAMIN, and Messrs. KENT, DANN, and HEUSER.

Not open to students who have taken any other course in poultry husbandry, except by special permission.

A brief course dealing with the practical application of the principles of poultry husbandry. For persons who do not specialize in this subject.

11. **Undergraduate Conference.** Credit one hour. Prerequisite course 8 and permission to register. M, 4.45–5.45. Poultry Building 325. Professor RICE, Assistant Professor BENJAMIN, and Messrs. KENT and DANN.

Round-table discussion of poultry literature and current problems of interest to the advanced student of poultry husbandry, including critical examinations of experiment station literature and research methods relating to poultry. Written reports will be required on many of the subjects discussed.

11a. **Seminary.** For graduate students only; required of all graduate students in poultry husbandry. M, 7.30–9.30 p. m. Poultry Building 325. Members of the departmental staff.

12. **Research.** Credit one to three hours. Must be preceded or accompanied by courses 8 and 11. Time arranged by appointment. Poultry Building. Professor RICE, Assistant Professor BENJAMIN, and Messrs. KENT and DANN.

An original investigation of a problem in poultry husbandry to be presented as a written thesis.

RURAL EDUCATION

1. **Agriculture in the High School.** Credit three hours. Open to seniors and juniors who have completed the prerequisites in education. Lectures, T Th S, 12. Practice, S, 8–10.30. Caldwell Hall 282. Professor WORKS and others.

A study of the purposes of vocational agriculture, organization and presentation of subject matter, textbooks, and home-project and extension activities of the high school. Course will be given if there is sufficient demand.

RURAL ENGINEERING

3. **Farm Mechanics.** Credit three hours. Students are urged to take Drawing 1 in preparation for this course. Lectures, W, 12. Caldwell Hall 100. Recitations, F, 8. Forestry Building 126. Practice, F, 2–4.30. Rural Engineering Building. Professor H. W. RILEY and Mr. HAZEN.

A study of the principles of operation, the details of construction, and the practical operation and care of: machinery, including gasoline engines, devices for transmitting power, hydraulic rams, pumps, spray nozzles, spraying outfits, water-supply outfits; implements, including mowers and binder attachments, with a discussion of the special mechanical features of some of these implements now on the market. Laboratory fee, $2.

19. **Research in Farm Mechanics.** Credit one or more hours. Prerequisite course 3 or its equivalent, and permission to register, together with natural ability in mechanical practice. Professor H. W. RILEY.

Special work in farm mechanics on problems under investigation by the Department or of special interest to the student, provided, in the latter case, that the Department can furnish adequate facilities.

20. **Farm Engineering.** Credit three hours. Prerequisite plane geometry; students are urged to take Drawing 1 in preparation for this course. Lectures, T Th, 10. Caldwell Hall 143. Practice, W, 2–4.30. Caldwell Hall 400. Mr. STRAHAN.

A study of the practical solution of the elementary problems involved in connection with surveying and mapping the farm; locating, digging, and laying drains; laying out building foundations and farm water-supply and sewage disposal systems. From the data obtained in the field a contour map will be drawn for one of the fields near the College. Attention will also be given to concrete construction, the design of simple structures, and estimates of their cost. Laboratory fee, $2.

28. **Farm Engineering, Advanced Course.** Credit two or more hours. Prerequisite course 20 or its equivalent, and permission to register. Lectures, M, 8. Caldwell Hall 250. Practice, one problem as assigned. Mr. STRAHAN.

30. **Farm Structures.** Credit three hours. Prerequisite Drawing 1 or its equivalent. Lectures, T Th, 12. Caldwell Hall 400. Practice, S, 8–10.30. Rural Engineering Building. Mr. HAZEN.

A study of building materials used on the farm; the principles of construction for barns, stables, and other farm buildings, and their application in practice.

SOIL TECHNOLOGY

1. **Principles of Soil Management.** Credit three hours. Prerequisite Chemistry 1 and Geology 1. Lectures, T Th, 9. Caldwell Hall 100. One laboratory period a week, M or W, 2–4.30. Caldwell Hall 49. One recitation a week, M, W, or F, 10. Caldwell Hall 143. Students must consult the Department in regard to laboratory and recitation appointments before registering for the course. Assistant Professor BUCKMAN.

A comprehensive course dealing with the origin, composition, and properties of soils, with particular reference to their management in crop production. The

laboratory work will consist in practice designed to demonstrate fundamental physical relations. Laboratory deposit, $3.

5. **Soil Surveying.** Credit two hours. Prerequisite course 1 and Physical Geography 5. Practice by appointment. Field, and Caldwell Hall 143. Assistant Professor BUCKMAN.

A course designed to provide the practical, as well as the technical and theoretical, phases of soil survey. The preparation of maps and reports will be a feature of the course. Detailed as well as extended soil mapping will be studied. A good knowledge of glacial geology is necessary for this work.

11. **Research.** For graduate students only. By appointment. Caldwell Hall. Professor BIZZELL. Three graduate students may register for their major subjects with Professor LYON.

14. **Seminary.** Without credit toward graduation. Open to seniors who have had course 6, and required of graduate students. Caldwell Hall. Professors LYON, FIPPIN, BIZZELL, and Assistant Professors BUCKMAN and WILSON.

VEGETABLE GARDENING

3. **Commercial Vegetable Gardening.** Credit four hours. Open only to students who have had the work of the second term. Lectures, T Th, 8. Practice, T Th, 10–1. Poultry Building 325, vegetable greenhouses, and gardens. Messrs. WORK and KENERSON.

The time of this course corresponds with the growing season for the crops, and the student is in touch with plantings of the leading vegetables in the departmental gardens. This affords excellent practice in the care, harvesting, and marketing of the products. Each student is assigned a small garden plot which he cares for throughout the term. Several short excursions are made to near-by market gardens. There will be a one-, two-, or three-days trip to some of the most important vegetable-growing centers in the State, the cost of which will be $10 to $15; exact date to be arranged. Laboratory fee, $2.

5. **Systematic Vegetable Crops.** Credit three hours. Prerequisite course 3, or in special cases course 2, and permission to register. Lecture, T, 9. Poultry Building 325. Laboratory, Th F, 2–4.30. Vegetable gardens at East Ithaca. Messrs. WORK and KENERSON.

Lectures and descriptive studies dealing with vegetable crops, their origin and botany. Special attention will be given to the varieties of the different vegetables, to their characteristics and their adaptation to different cultural and market conditions, and to judging and exhibition work. The important commercial types of different vegetables are grown in the garden each year and there is an abundance of first-hand material for the course. A judging trip to State Fair at Syracuse will be required. Each student makes a special systematic study of a crop or a group of crops, and presents a typewritten and bound report. Laboratory fee, $2.

6. **Practice.** One or two hours, without credit toward graduation. Prerequisite permission to register. By appointment. Messrs. WORK and SPIEGEL.

Opportunity will be offered for a few students who are specializing in vegetable gardening to obtain practice in greenhouses and gardens.

7. **Vegetable Gardening, Advanced Course.** Credit two or more hours, by arrangement. Prerequisite course 3 and permission to register. Poultry Building 232. Mr. WORK and assistants.

A special problem, to be arranged; occasional short excursions. A typewritten and bound report of the special problem is required. Laboratory fee according to the nature of the problem.

OFFICIAL PUBLICATIONS OF CORNELL UNIVERSITY

Issued at Ithaca, New York, monthly from July to Novembe. inclusive, and semi-monthly from December to June inclusive.

[Entered as second-class matter, August 31, 1910, at the post office at Ithaca, New York, under the Act of July 16, 1894.]

These publications include

The Annual Register (for the year 1915–16, published January 1, 1916, price 50 cents.

Book of Views, price 25 cents.

Directory of Faculty and Students, Second Term, 1915–16, price 10 cents, and the following informational publications, any one of which will be sent gratis and post-free on request. The date of the last edition of each publication is given after the title.

General Circular of Information for Prospective Students, December 15, 1915.

Announcement of the College of Arts and Sciences, May 1, 1915.

Announcement of Sibley College of Mechanical Engineering and the Mechanic Arts, January 15, 1916.

Announcement of the College of Civil Engineering, March 15, 1916.

Announcement of the College of Law, June 1, 1915.

Announcement of the College of Architecture, August 1, 1915.

Announcement of the New York State College of Agriculture, July 1, 1915.

Announcement of the Winter Courses in the College of Agriculture, September 1, 1915.

Announcement of the Summer Term in Agriculture, April 1, 1916.

Announcement of the New York State Veterinary College, June 15, 1915.

Announcement of the Graduate School, February 1, 1916.

Announcement of the Summer Session, March 1, 1916.

Annual Report of the President, November 1, 1915.

Pamphlet on prizes, samples of entrance and scholarship examination papers, special departmental announcements, etc.

Announcement of the Medical College may be procured by writing to the Cornell University Medical College, Ithaca, New York.

Correspondence concerning the publications of the University should be addressed to

The Secretary of Cornell University,
Ithaca, New York